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HOW TEACHERS MAY USE FARMERS' BULLETIN 602, CLEAN MILK: PRODUCTION AND HANDLING

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IF THE TEACHING OF AGRICULTURE and related subjects is to have any permanent effect upon community life and practice it must have a vital connection with the daily experiences of the pupils and must utilize the latest and best information available. The teacher must so organize the available subject matter that it will touch closely the pupil's life and experiences.

In order to give the teacher some material assistance along these lines, leaflets such as this, indicating how teachers may make use of information contained in publications of the United States Department of Agriculture have been prepared, and it is hoped that they may help to improve instruction in agriculture and kindred subjects in the schools and directly connect it with community interests.

The leaflets are designed especially for teachers in elementary schools, but in many cases will be suggestive and helpful to teachers in secondary schools, and in urban as well as rural schools, depending upon the subject matter and the interests of the community served by the schools.

HOW TEACHERS MAY USE FARMERS' BULLETIN 602, CLEAN MILK: PRODUCTION AND HANDLING.

Range of use.—All rural elementary schools.

Relation to the course of study.—The material in this bulletin can be used in the study of dairying in the course in elementary agriculture and will suggest correlations in the study of physiology and home economics.

Illustrative material.—Collect as many photographs as possible showing stables, milking places, and milk houses of the community. Mount these and then secure pictures of model dairy barns and milk houses and mount on the same sheet to show differences. Secure also photographs and pictures of sanitary and insanitary conditions of the dairy barn, milk house, cows, and milkers. Construct from drawings furnished by the extension service of the State college of agriculture plans of a model dairy barn and milk house. Secure actual specimens of clean and unclean milk. Obtain milk pails used in the district, and from dealers sanitary models that may be recommended for use. Carefully mount and file any material that may be made a part of the permanent equipment of the school.

Topics for study.—I. General importance of clean milk.

II. Bacteria in milk: Causes of bacteria in milk, sources, control; rapidity of growth; factors influencing; effect on milk; number of bacteria in milk depends on what?

III. Definition of clean milk.

IV. Importance of clean milk to the consumer: Why should the consumer of milk need to be advised as to the importance of clean milk? Diseases caused by unclean milk. Importance of cleanliness.

V. Importance of clean milk to the producer: Immediate benefits; future benefits; safeguarding consumer and protecting herd. Economic advantages: Prevents loss of milk, loss of customers; protects health of the family, health of the dairy herd. Moral results.

VI. Protection from specific diseases: (1) Sources of disease bacteria in milk.

(2) Health of cattle: Tuberculous cattle; danger in using their milk; testing for tuberculosis, how done, how often, by whom; disposition of affected cows.

(3) Health of milk handlers: Diseases which may be carried by milk; source of the bacteria; precautions to be observed.

(4) Water supply: Importance of pure water; dangers of polluted water.

(5) Disposal of waste: Spread of disease from waste; care of manure; proper handling and care of human excreta.

(6) Flies: The fly as a disease carrier; exclude them from dairy; methods of prevention and control of flies.

VII. Prevention of high bacterial count in milk: (1) Advantages of a low bacterial count; disadvantages of a high bacterial count; sources of bacteria in milk; sources and remedies for high bacterial count.

(2) Clean cows: Bacteria on body of cow; clean the cow at milking time; methods to be used; factors about the stable that aid in keeping the cow clean; results obtained from cleaning the cows.

(3) Small top milk pails: Advantages.

(4) Washing and sterilizing dairy utensils: Effect of dirty vessels on market milk; types of bacteria added to the milk; the best remedies for dirty utensils; how applied? Sterilization: Best method, effects; types of sterilizers to be used; the home sterilizer; a tank sterilizer; the steam boiler; temperature for sterilization; time required.

(5) Preventing growth of bacteria: Cooling of milk; its effect on bacteria; methods of cooling; effect on cream; time for cooling.

VIII. Material aids in dairying and general cleanliness: Their effect on the bacterial count of milk; their advantages to the dairyman.

(1) The stable: Its location, especially in relation to other buildings; drainage, advantages of a clean barnyard; chief factors in construction, the floor, stalls, mangers, walls, ceiling, light, and ventilation. Compare stables erected many years ago with modern dairy barns; common defects in dairy stables.

(2) The milk house: Location in relation to stable and other buildings; the ideal location; purpose of the milk house; factors in construction tending to cleanliness; water supply, both hot and cold; necessary equipment.

(3) Utensils: Characteristics; features to avoid; care after washing and sterilization.

(4) Milking and care of milk: Preparing cows for milking; preparation of the milker—why? Milking with dry hands—why? Necessity for cleanliness; milk to be taken at once to milk house—why? In handling milk three things are to be done—weighing, object; straining, purpose, methods; cooling, purpose, methods.

IX. Summarize the essential factors in producing clean milk.

Practical exercises.—As a preliminary to these lessons make a district survey of dairy conditions. (Suggested forms are given on p. 6.) Note the good and the bad conditions found in the handling of milk on the farm. What type of stable is most common in the

district? What use is made of the milk produced in the district? Where are the markets for the milk and milk products? If there is a creamery convenient visit it with the class, noting the various processes in handling the milk and the preparation of the milk and its products for the market. If possible, visit a good dairy farm in the district, making a study of the method of handling the milk. A practical demonstration of the production of clean milk may be made there, showing the steps in cleaning the cow for milking, the milk pails, the proper methods of handling and cooling the milk. This may be made a very practical demonstration. If deemed advisable, a special meeting of the patrons of the district may be called for this demonstration, and the county agent and county demonstrator may both be called on for assistance in the meeting. Have samples of milk brought to school and allow them to stand for some time and then examine carefully for traces of dirt settled in the bottom of the container. Filter the milk through several layers of fine cotton cloth and examine it for deposits of dirt. Use tact in discussing insanitary conditions noted on farms in the district. The aim should be to show clearly the right methods of milk production and handling and to discourage any improper methods. Make drawings showing floor plans of the common type of dairy stable; also floor plans of a model dairy barn. Study these plans and then visit a barn of each type, noting advantages and disadvantages of each. If separators are in common use, give demonstrations of their proper use, care, and cleaning. Usually the local dealer will loan the school a separator for study.

Correlation.—Language: A written report on the district survey and a summary of the facts discovered will make a good lesson in language. Similar reports of field trips and other observation work will give additional drill in language. Booklets on clean milk, in which the work done in these lessons is carefully summarized, will be valuable.

Geography: Trace the milk-market routes and locate the chief centers to which the market milk of the district is shipped. Draw a map of the district, locating thereon the important facts brought out in the district survey.

Arithmetic: Problems involving cost and selling price of milk; difference in price of milk of varying standards. Milk production of single cows and of the dairy herd and value of milk products both sold and consumed in the community will be suggested by these lessons.

SUGGESTED FORMS FOR A DISTRICT DAIRY SURVEY.

1. DAIRY HERDS AND HOUSING.

Owner of farm.	Number of cows in herd.	Breed.	Number of pure-bred.	Number of grade.	Dairy buildings.					Milk records kept.	Milk tested.
					A common barn.	Separate barn.	Modern barn.	Modern milk house.	Common type of milk house.		

2. HANDLING AND DISPOSAL OF MILK.

Milking place.	Kind of milk bucket.	How cooled.	How separated.	Milk disposal.			Home use.	Markets.
				Milk sold.	Cream sold.	Butter sold.		

